

WHAT IS CLAIMED IS:

1. A circular pole piece included in a magnetic circuit for magnetic resonance imaging (MRI) and being divided into at least two portions, that is, a center portion including the center of said circular pole piece and a marginal portion including the margin thereof, wherein:

the permeability which said center portion made of a soft magnetic material exhibits with an external magnetic field applied thereto is higher than the permeability of said marginal portion made of a soft magnetic material.

2. A circular pole piece according to Claim 1, wherein the soft magnetic materials to be made into said respective portions have different compositions.

3. A circular pole piece according to Claim 1, wherein: said center portion made of a soft magnetic material has a plurality of non-directional magnetic steel sheet tiles layered with the directions of the axes of easy magnetization thereof varied so that the tiles will exhibit a non-directional property as a whole; and said marginal portion made of a soft magnetic material is formed with non-directional magnetic steel sheet tiles devoid of an axis of easy magnetization.

4. A circular pole piece according to Claim 1, wherein: said center portion made of a soft magnetic material has a plurality of directional magnetic steel sheet tiles layered with the directions of the axes of easy magnetization thereof varied so that the tiles will exhibit a non-directional property as a whole, and has a non-directional magnetic steel sheet tile, which is devoid of an axis of easy magnetization,

layered in combination with said directional magnetic steel sheet tiles; and said marginal portion made of a soft magnetic material is formed with non-directional magnetic steel sheet tiles devoid of an axis of easy magnetization.

5. A circular pole piece according to Claim 1, wherein: said center portion made of a soft magnetic material has a plurality of directional magnetic steel sheet tiles layered with the directions of the axes of easy magnetization thereof varied so that the tiles will exhibit a non-directional property as a whole; and said marginal portion made of a soft magnetic material has a plurality of directional magnetic steel sheet tiles layered with the directions of the axes of easy magnetization thereof varied so that the tiles will exhibit a non-directional property as a whole, and has a non-directional magnetic steel sheet tiles, which is devoid of an axis of easy magnetization, layered in combination with said directional magnetic steel sheet tiles.

6. A circular pole piece according to Claim 1, wherein said center portion made of a soft magnetic material and said marginal portion made of a soft magnetic material have a plurality of directional magnetic steel sheet tiles layered with the directions of the axes of easy magnetization thereof varied so that the tiles will exhibit a non-directional property as a whole.

7. A circular pole piece according to Claim 1, wherein said center portion made of a soft magnetic material and said marginal portion made of a soft magnetic material have a plurality of directional magnetic steel sheet tiles layered with the directions of the axes of easy magnetization thereof varied so that the tiles will exhibit a non-directional property as a whole, and have a non-directional magnetic

steel sheet tile, which is devoid of an axis of easy magnetization, layered in combination with said directional magnetic steel sheet tiles.

8. A circular pole piece according to Claim 1, wherein: said center portion made of a soft magnetic material and said marginal portion made of a soft magnetic material have a plurality of directional magnetic steel sheet tiles layered with the directions of the axes of easy magnetization thereof varied so that the tiles will exhibit a non-directional property as a whole, and have a non-directional magnetic steel sheet tile, which is devoid of an axis of easy magnetization, layered in combination with said directional magnetic steel sheet tiles; and the ratio of the non-directional magnetic steel sheet tile to the directional magnetic steel sheet tiles is higher in said marginal portion made of a soft magnetic material than in said center portion made of a soft magnetic material.

9. A circular pole piece according to Claim 1, wherein: said center portion made of a soft magnetic material has a plurality of directional magnetic steel sheet tiles layered with the directions of the axes of easy magnetization thereof varied so that the tiles will exhibit a non-directional property as a whole; and said marginal portion made of a soft magnetic material is formed with ferrite tiles.

10. A circular pole piece according to Claim 1, wherein: said center portion made of a soft magnetic material has a plurality of directional magnetic steel sheet tiles layered with the directions of the axes of easy magnetization thereof varied so that the tiles will exhibit a non-directional property as a whole, and has a non-directional magnetic steel sheet tile, which is devoid of an axis of easy magnetization,

layered in combination with said directional magnetic steel sheet tiles; and said marginal portion made of a soft magnetic material is formed with ferrite tiles.

11. A circular pole piece according to Claim 1, wherein said center portion made of a soft magnetic material is formed with amorphous soft magnetic material tiles, and said marginal portion made of a soft magnetic material is formed with non-directional magnetic steel sheet tiles devoid of an axis of easy magnetization.

12. A circular pole piece according to Claim 1, wherein said center portion made of a soft magnetic material is formed with Parmalloy tiles, and said marginal portion made of a soft magnetic material is formed with non-directional magnetic steel sheet tiles devoid of an axis of easy magnetization.

13. A circular pole piece according to Claim 1, wherein said center portion made of a soft magnetic material is formed with Parmalloy tiles, and said marginal portion made of a soft magnetic material is formed with ferrite tiles.

14. An MRI system including a circular pole piece of Claim 1.